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RESOLUTIONS OF THE 21st COMMUNIST PARTY CONGRESS AND SOVIET SCIENCE

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In 1958 the Communist Party of the Soviet Union and the Soviet government reviewed the development of Soviet society. The review showed that in our country all the conditions have been established that are necessary for the transition from the first phase of constructing a communist society -- socialism -- to the second phase, the extensive development of communism. In order to solve this historical problem a draft has been worked out under the party's direction for a large plan to develop the national economy of the USSR during 1959-1965. Nationwide discussion of this draft has shown that our people are united in their efforts to follow the party summons to exert every effort for the construction of a communist society.

Fulfillment of this program of national economic construction is based on important changes which took place in 1959. Among the most important organizational measures the following should be mentioned here: new forms of industrial and construction management, reorganization of machine tractor stations, further development of the kolkhoz system with a view to a rapid increase in production of agricultural products, accelerated development of chemical industry, etc.

In the cultural area the party is carrying out at the present time a fundamental reorganization in the system of public education. The classics of Marxism-Leninism have already laid down the theoretical course for the educational development of the nation in a socialist and communist society. They pointed out that in this society the typical methods for acquiring scientific and other forms of knowledge were those in which the educational process was quite closely associated with learner participation in various types of productive labor. A reform will be carried out in

this direction within the next few years among the secondary and higher schools; this should prove to be an important measure in overcoming the conflict between mental and physical labor and in creating thoroughly developed individuals.

The fundamental problem of the coming seven-year period is that of making maximum gains in the world economic competition between socialism and capitalism. Because of the multifold expansion of creating activity among national masses of population, it is essential to develop the national economy rapidly and to guarantee the necessary balance among its branches.

Soviet science must assist in the solution of these problems; only by its further development and widespread application in the national economy and culture will it be possible to reach the necessary increase in production rates in the USSR national economy. The 21st Congress of the Communist Party is entrusting to Soviet scientists the serious responsibility of accelerating the construction of a communist society at an ever increasing rate.

The 1950's were the beginning of the atomic age. Consequently a most important task for Soviet science is as rapid as possible, development of research on the mastery of nuclear energy in order to add to the energy sources available in the rapidly developing economy of the country.

In addition it should not be forgotten that the problem of making direct use of the inexhaustible resource of solar energy has not been solved yet.

The increased raw material sources of the national economy demand much scientific development in the creation of new synthetic materials not found in nature, as was done in the case of metals, wood and silicates which up to now have been the main types of industrial and construction raw materials.

Further mechanization and automation of production using computers and electronic machines will make it possible to increase work productivity significantly during the seven-year period.

Geophysical science is faced with large problems; there are several areas in which geophysical science may be applied to the problems indicated in the seven-year plan. First of all there is the widespread application of geophysics to geology. Geology should gradually become an exact science, using the methods of geophysical science to solve problems pertaining to the structure of the upper layers of the earth's surface.

The development of new methods and the improvement of existing methods for geophysical prospecting of useful minerals depends upon theoretical work and experimental research.

In this area of geophysics aeromethods of prospecting should be widely developed; some aeromethods have already been worked out and used successfully. Methods for interpreting anomalous fields must be further developed. In manufacturing organizations the interpretation of data from geophysical prospecting -- seismic, magnetic, gravimetric, etc -- is usually based on ordinary calculation methods. Now electronic computer machines offer the possibility of significantly increasing the speed and accuracy of calculating processes, but theoretical investigations will be necessary in order to apply them.

Progress in exploratory geophysics depends to a large extent on the level of research on the structure of the earth as a whole. Better knowledge about depth prpcesses will make it possible to formulate and more effectively solve practical problems in the study of the earth's crust. The above-mentioned research may be considerably enhanced by the substantial contributions made to geology by new methods obtained from geophysics and by more widespread introduction of physical, chemical and mathematical methods into the field of geology.

It may also be hoped that further development of seismic depth probing, thorough study of the gravitational, thermal and electromagnetic fields of the earth, and increased work in the field of tectonics will bring nearer the possibility of predicting natural phenomena and also the possibility of using natural conditions -- in particular the inner heat of the earth -- to supply the needs of the national economy.

The 21st Congress in setting up a goal of doubling sea-borne freight commerce in the seven-year period obliges geophysicists to improve significantly the work done on the fostering of navigation by making most extensive studies of sea currents and the nature of sea disturbances.

The procuring of new food, chemical and energy resources also demands a systematic investigation of the seas and oceans. The achievements obtained in the study of the Pacific Ocean floor and currents should also be consolidated and developed; this will undoubtedly aid in the solution of several general problems in geophysics.

The investigation of various atmospheric processes -- weather and climate formation, currents of varying scale from general circulation to atmospheric turbulence, precipitation, etc., which exert a strong influence on the most

varied areas of the national economy (aviation, communication, agriculture) -- should aid in making use of these phenomena or alleviating their consequences.

The achievements gained in working out hydrodynamic methods of weather forecasting should be consolidated and expanded by their constant application in actual practice.

It should be remembered that further development of calculating methods in weather prediction can take place only if the calculation can be checked on rapid computing machines. The use of electronic machines for weather prediction at present governs both the intensiveness of new method development as well as the time when it will be possible to put these new methods into application in prediction.

Better knowledge of the conditions of phase conversion of water in the atmosphere is a basis for possible active influencing of local weather conditions. The harmful effects of temperature drop may be alleviated only by more persistant efforts of Soviet geophysicists in this area of agricultural improvement.

The development of air transport presents geophysicists with the task of working out new, sufficiently inexpensive methods for probing the stratosphere up to altitudes attainable in aviation, by the widespread application of various physical and chemical properties of the atmosphere at these altitudes. The problem of improving methods of observation remains equally important in all branches of geophysics, which, considering the need for massive observations, must automate data-collecting processes for different characteristics of variable geophysical fields by using the latest radio-electronic methods. Artificial earth satellites are an excellent example of a solution to this problem. Our country was the first to begin the conquest of space but in order to make further achievements in this field it is necessary to widen our knowledge of the upper layers of the atmosphere.

Unique data obtained during the course of the Third International Geophysical Year and having great geophysical significance may be quickly and effectively used if its application is sought in the setting up and solution of problems in geophysics which resisted solution by usual observational data.

All these problems demand a reorganization of the scientific organization itself, with a serious and dedicated increase in the productivity of the scientific workers by cooperation and interaction of individual scientists as well as of entire collectives, in order to coordinate work plans in the solution of difficult and complex problems.

The period of extensive construction of the communist society according to the seven-year plan adopted by the 21st Party Congress for developing the national economy demands effort from all sections of our society. In this process of social reconstruction from socialism to communism the individual will be reconstructed also, his consciousness and behavior. The features of the old society should gradually be obliterated and be replaced by new habits of social and personal behavior. Some of the main traits of the individual in the communist society will be: acreative initiative in any area of social activity, well rounded education, friendly mutual assistance and participation in collective work with complete consciousness of his role in the solution of general problems. Scientific workers should reconstruct the methods and style of their work so that the communistic form of labor will also be included in the scientific sphere.

Soviet scientists are applying all their efforts to the fulfillment of the seven-year plan for developing the national economy, in order to guarantee a material basis for the communist society.

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